```
                10        20        30        40        50
GFP       MSKGEELFTGVVPILVELDGDVNGHKFSVSGEGEGDATYGKLTLKFICTTGKLPVP..WPT
DsRed     MRSSKNVIKEFMRFKVRMEGTVNGHEFEIEGEGEGRPYEGHNTVKLKVTKGG.PLPFAWDI
ppluGFP1          MPAMKIECRISGTLNGVVFELVGGGEGIPEQGRMTNKMKSTKGA..LTFSPYL
ppluGFP2          ----------T------E---------T----------------..-------
laesGFP           --V----------M--EE-----A-D-NTDE------------..P-S-----
pmeaGFP1          --D--L--H----M--EE---I-A-D-NTDE---------I--..PIS-----
pmeaGFP2          --D--L--H----M--EE---I-S-D-NTD------N---I--..P-S-----
pmedGFP1          --N--L-------M--EE-----A---NTDE------------..P-S-----
pmedGFP2          --H--L-------M--EE-----A-D-NTDE-----Q------..P-S-----
pdae1GFP          -A--------T--M---E---------NTD-------------..P-S-----

        60        70        80        90       100       110
GFP       LVTTFSYGVQCFSRYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAEVKFEGDT
DsRed     LSPQFQYGSKVYVKHPADIP..DYKKLSFPEGFKWERVMNFEDGGVVTVTQDSSLQDGC
ppluGFP1  LSHVMGYGFYHFGTYPSGYEN.PFLHAANNGGYTNTRIEKYEDGGVLHVSFSYRYEAGR
ppluGFP2  ---------------------.-----I-------------------------------
laesGFP   ---I-------YA-F-A----.VY----K--------T-R-----IIS-N-T----GNK
pmeaGFP1  ---IL---Y---A-F-A----.IY---MK----S-V-T-R-----IISIT-N----GNK
pmeaGFP2  ---IL---Y---A-F-A----.IY---MK----S-V-T-R-----IISIT-N----GSK
pmedGFP1  ----L---Y--YA-F-A----.VY---MK----S---T-R-----IISAT-N----GRQ
pmedGFP2  ----L---Y--YA-F-A----.VY---MK----S---T-R-D---IISAT-N----GRQ
pdae1GFP  --------------F------.-YV--MT----------S-------YLT-N--LDGNK

        120       130       140       150       160       170
GFP       LVNRIELKGIDFKEDGNILGHKLEYNYNSHNVYIMADKQKNGIKVNFKIRHNIEDGSVQL
DsRed     FIYKVKFIGVNFPSDGPVMQ.KKTMGWEASTERLYP..RDGVLKGEIHKALKLKDGGHYL
ppluGFP1  VIGDFKVVGTGFPEDS.VIFTDKIIRSNATVEHLHP.MGDNVLVGSFARTFSLRDGGYYS
ppluGFP2  ----------------.-------------------.----------------------
laesGFP   ---------S---AN-.--------K--P-C--IY-.K---I--NAYT--WM--------
pmeaGFP1  I------------TN-.L-------K--P-C-NMF-.KA--T--NAYT--YL-K------
pmeaGFP2  I------I-----T--.L-------K--P-C-NMF-.KA--I--NAYT--YL-K------
pmedGFP1  IH----------A--.X-------K--P-C--IY-.KAN-I--NAYT--WM--------
pmedGFP2  IH----------A--.I-------K--P-C--IY-.KAD-I--NAYT--WM--------
pdae1GFP  I-----C---------.--------K--PNC--FY-.-AE-IMKNAYM--L---------

        180       190       200       210       220       230
GFP       ADHYQQNTPIGDG.PVLLPDNHYLSTQSALSKDPNEKRDHMVLLEFVTAAGITHGMDELYK
DsRed     VEFKSIYMAKK...PVQLPGYYYVDSKLDITSHNEDYT.IVEQYERTEGRHHLFL
ppluGFP1  FVVDSHMHFKSAIHPSILQNGGSMFAFRRVEELHSNT..ELGIVEYQHAFKTPTAFA
ppluGFP2  ----------------------P-------------..-------------I---
laesGFP   AQ-NN-L---T-M--TM--------TY-K------QS..DV-------V--------
pmeaGFP1  AQ-NN---------TTM--------TY-V---T-TQN..-VA-----NV--------
pmeaGFP2  AQ-NN----------TM--------TH-V---N-TK-..NVA-----NV--------
pmedGFP1  AQ-NN---LQ-----TM-K------TY-K-----TQ-..-V-------V--R-----
pmedGFP2  AQ-NN---FK-----TM--------TY-K-----TQ-..-V-------V--R-----
pdae1GFP  GQ-T--I---N-------H------TY-------TQ-..D--------V--------
```

FIG. 1

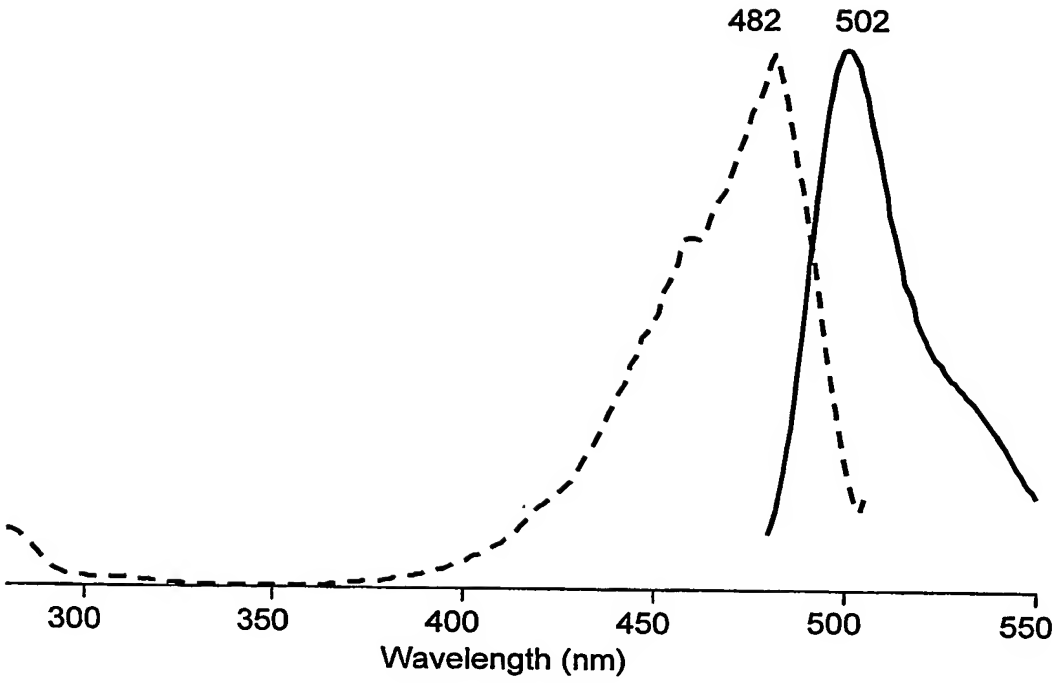
482
502
300
350
400
450
500
550
Wavelength (nm)

FIG. 2

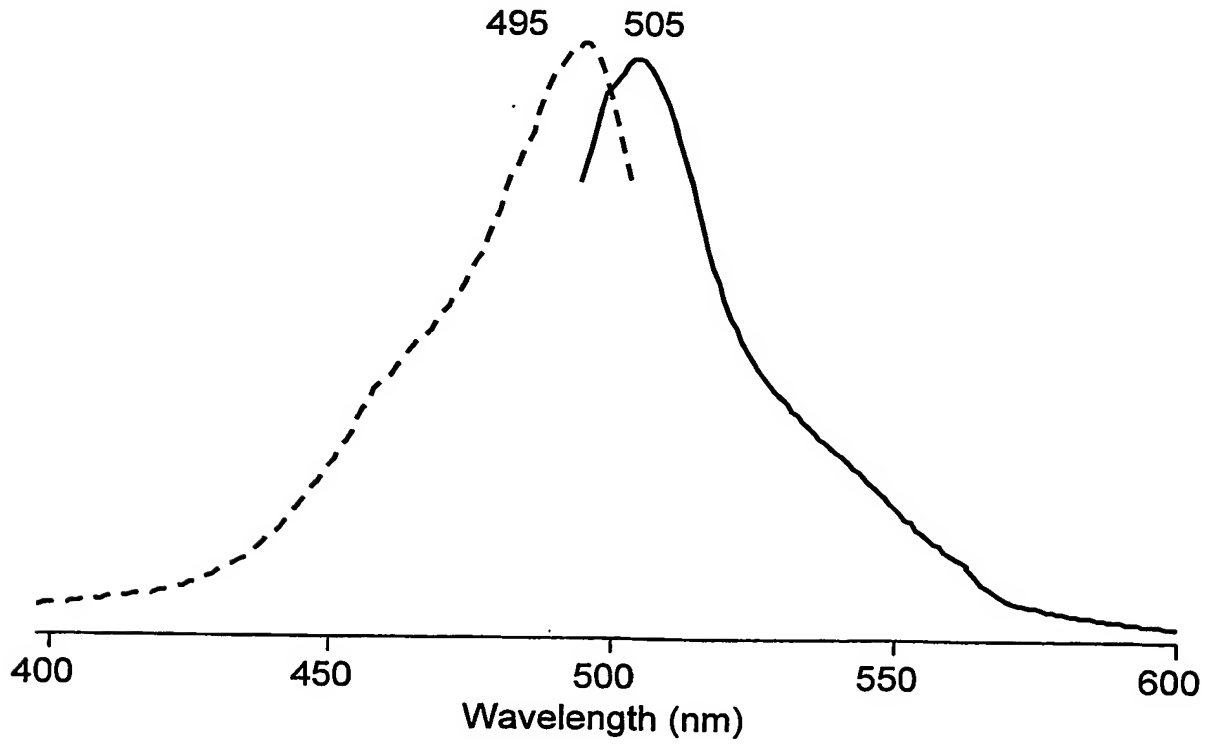
495
505
400
450
500
550
600
Wavelength (nm)

FIG. 3

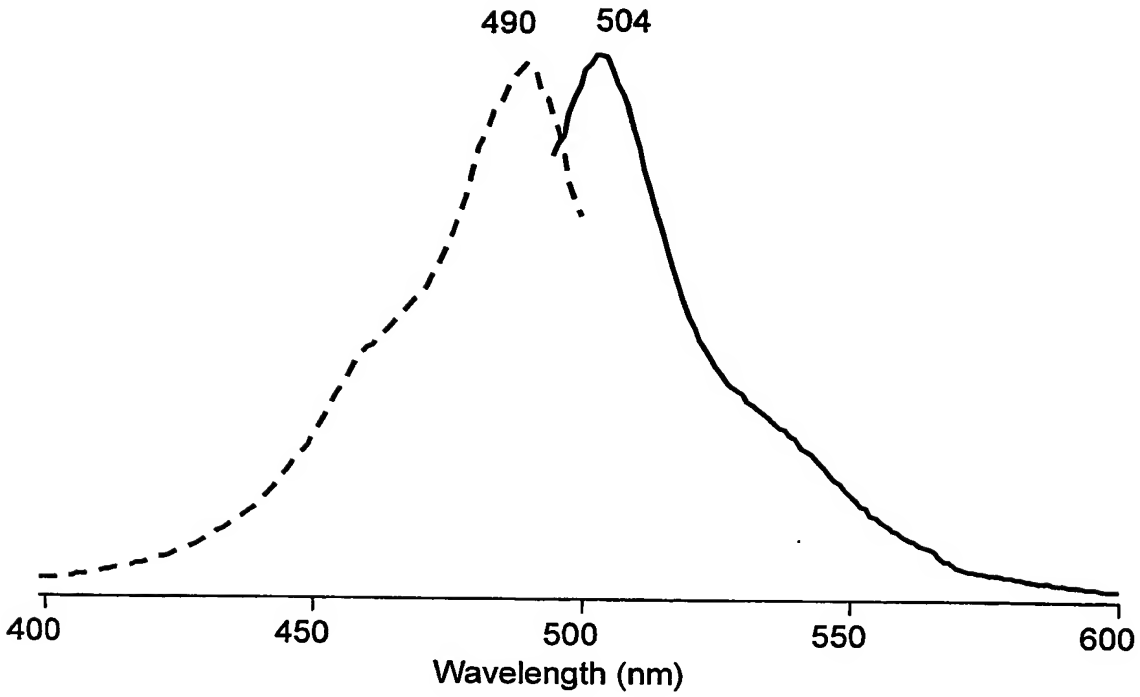
490
504
400
450
500
550
600
Wavelength (nm)

FIG. 4

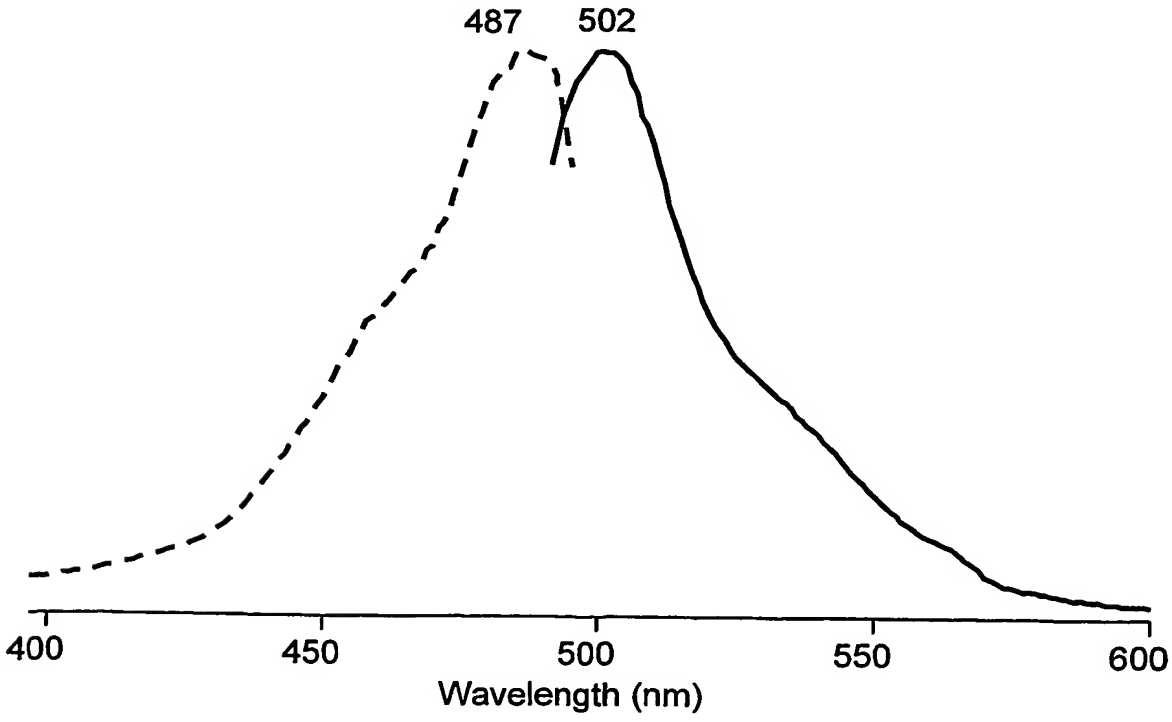
487
502
400
450
500
550
600
Wavelength (nm)

FIG. 5

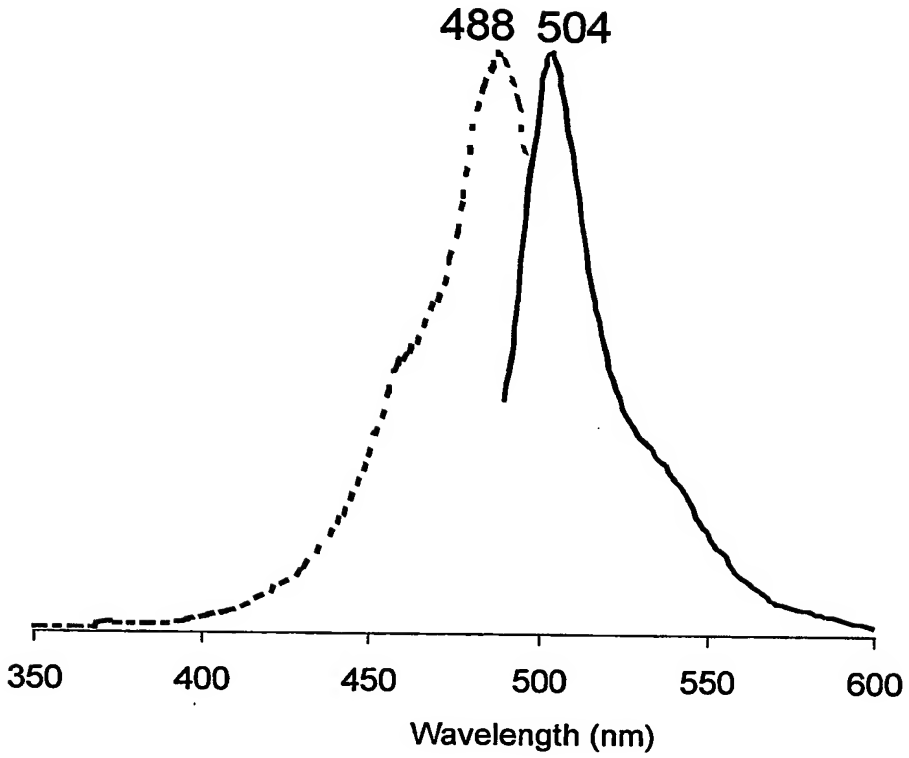
488
504
350
400
450
500
550
600
Wavelength (nm)

FIG. 6

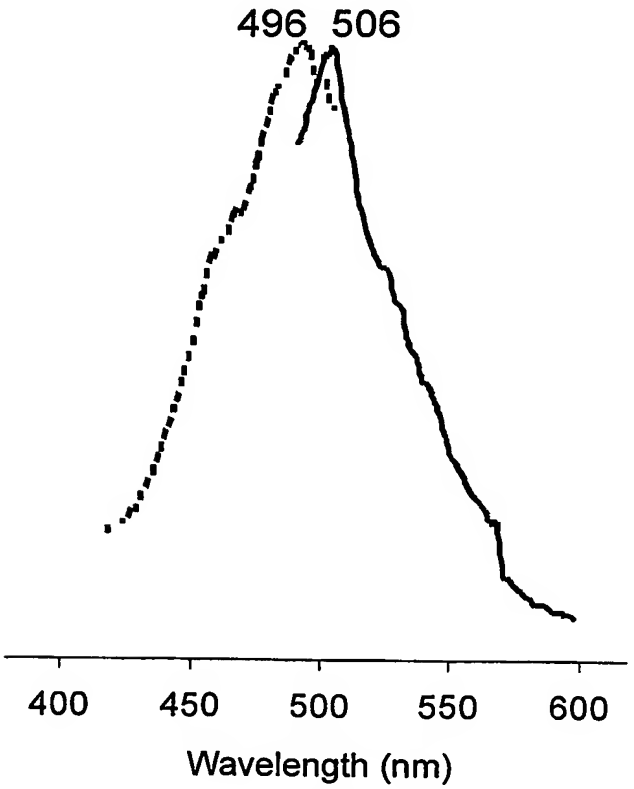
496
506
400
450
500
550
600
Wavelength (nm)

FIG. 7

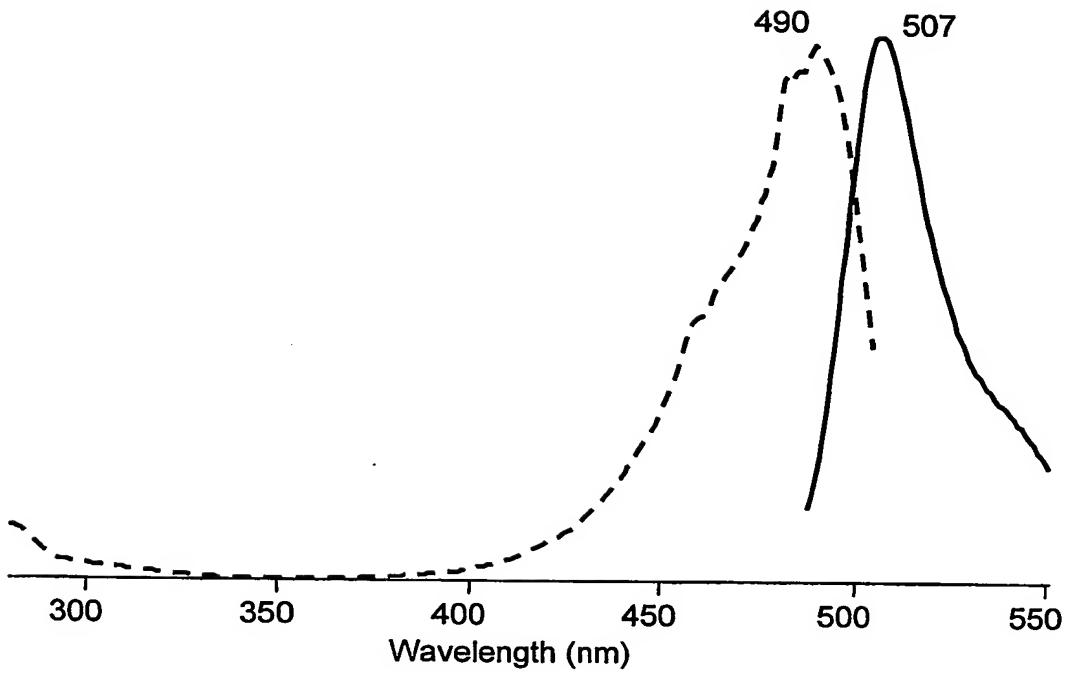
490
507
300
350
400
450
500
550
Wavelength (nm)

FIG. 8

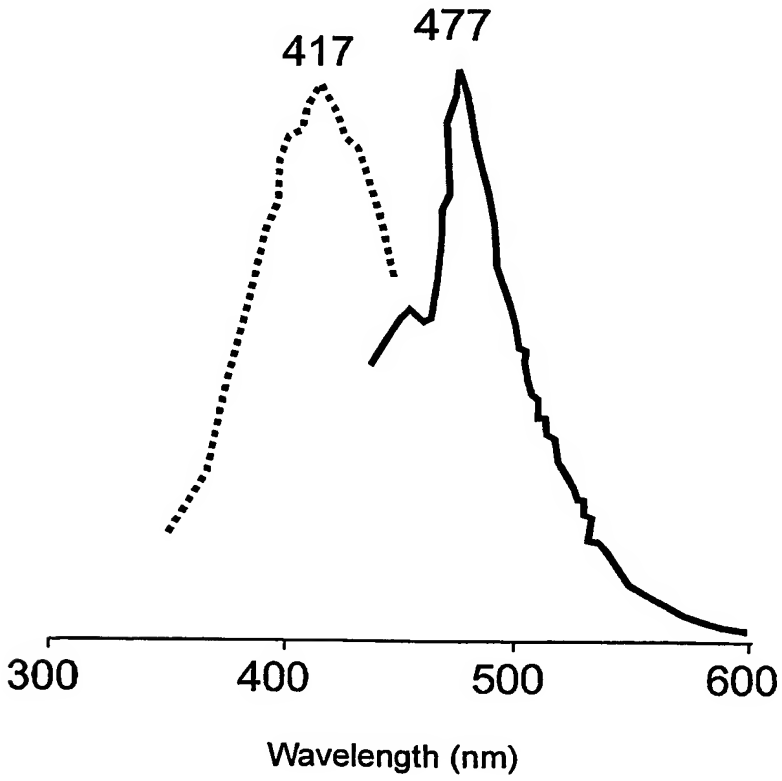
417
477
300
400
500
600
Wavelength (nm)

FIG. 9